B-1235

Evaluating Crop-Share Leases

Texas Agricultural Extension Service • The Texas A&M University System • Daniel C. Pfannstiel, Director • College Station, Texas

[Blank Page in Original Bulletin]

EVALUATING CROP-SHARE LEASES

Marvin Sartin and Norman Brints*

There are many approaches for evaluating a crop-share lease. The easiest and most commonly used method relies on history and tradition. Throughout most of Texas, share leases have traditionally been one-third for grain and one-fourth for cotton. While such agreements continue, the economic factors governing farming operations have changed, thus creating a need for reexamining terms of share leases.

An accepted approach to evaluating sharing arrangements is based on the relative contributions of tenant and landowner to production of the crop. This approach requires identification and evaluation of contributions made by the tenant and landowner.

This evaluation technique is based on the principle that income from the sale of the product produced and any input costs that are to be shared should be shared in the same proportion. If they are not, the tenant will not apply the optimum quantity of inputs, yields will be lowered and net return to the farm will be reduced. Variable inputs with the greatest influence on yield (fertilizer, insecticide, irrigation, etc.) should be shared by the landowner and the tenant.

An equitable crop-share lease encourages the tenant to use the same quantity of inputs and produce the same yield level as an owner-operator. The net return to the farm should not be adversely affected by the lease agreement.

Testing an existing lease agreement involves two steps. First, determine the total contribution of landowner and tenant to crop production. Second, if the ratio of their contributions is different from the existing division of the product, adjust the way in which the product and/or the costs are shared. When the income and the yield-determining variable inputs are shared in a manner equal to the relative contribution made by each party to total crop production, an equitable arrangement exists.

*Extension area economists-management, The Texas A&M University System.

TYPES OF COSTS

The landowner usually provides land, fences, buildings, irrigation equipment and a portion of the fertilizer and insecticide; whereas, the tenant usually provides machinery, labor, management and the remaining inputs to the crop. To adequately value these items, an understanding of fixed and variable costs is necessary.

Fixed (ownership) costs of particular assets consist primarily of depreciation and interest on investment. These costs are not always apparent because they do not require annual cash outlays; they are, however, real costs of owning business assets. Depreciation is the decline in value of an asset due to use and obsolescence. Interest on investment is the opportunity cost (return given up) of investing in that asset. In other words, if an individual had not purchased farmland or machinery, he could have purchased stocks, bonds or savings accounts which would have produced some return.

Other items that may be considered as fixed costs are taxes, insurance, general labor and management. Some of these costs are incurred whether or not the business operates, but all are normally independent of the particular enterprises selected or the production level. They

do not vary with production; thus, they are considered fixed for this analysis.

Variable costs are easier to see. Inputs with useful lives of less than 1 year generally are termed variable inputs. Items such as seed, fertilizer, feed, etc., usually are used only when the business is operating and are purchased and used within 1 year. The particular items purchased and the specific quantity depend upon the selection of enterprises. The quantity of specific variable inputs and their costs vary from year to year.

EVALUATING CONTRIBUTIONS

The first step required to establish a sharing ratio for the evaluation of a current lease agreement is calculation of the proportion of total (fixed and variable) inputs supplied by the tenant and landowner. While this approach requires time and detail, those who exercise care with data development can formulate an equitable lease agreement.

A worksheet is provided along with a detailed explanation to assist persons in determining the percentage (ratio) of contributions to a specific crop and for the total farm. An illustrated worksheet also is provided, using a farm situation with a typical lease agreement of one-fourth for cotton and one-third for grain. Do not accept the example farm as representing any current farm situation, but rather as an aid in illustrating the mechanics of using the worksheet.

EVALUATING THE AGREEMENT

After the percentage value or ratio of total contribution has been determined (line 39 of worksheet), compare it with the existing lease agreement. If the existing agreement shares the product or sales at a ratio substantially different from the ratio determined on the worksheet, then adjust the agreement. Make adjustments in one of two methods:

- Method 1. Change the existing agreement to share the product or sales of products by the same percentage established on the worksheet on line 39.
- Method 2. Change the inputs that are shared and/or the sharing ratio for them (fertilizer, insecticide, irrigation, etc.) so that total expense would be shared at the same ratio that the product or sales of product are being shared under the existing agreement.

In the example, the landowner contributes 25.5 percent of the total inputs into cotton production and 26.3 percent of total inputs into sorghum (line 39). The traditional one-fourth crop-share lease for cotton is substantiated by this calculation, but the common one-third rent on sorghum does not appear to reflect the individuals' contributions. In this example an overall one-fourth crop-share for the farm might be more equitable (method 1) or make adjustments in the ratio of cost share of one or more of the variable inputs for grain sorghum (method 2).

Method 1. To promote simplicity in situations where crop enterprises do not change often, determine an overall rental share for all enterprises produced on the farm. The relative contributions of each party to the whole farm operation also is calculated on line 39. In the example, the overall ratio and that for the specific enterprises are very close to 25 percent. Thus a rental agreement of one-fourth for all crops would offer an equitable agreement.

Method 2. If the share of the product under the existing agreement for the example farm is to be maintained, make adjustments in the way grain sorghum costs are shared. Line 39 indicates 73.7 percent of the costs for grain sorghum is being furnished by the tenant but he is only receiving two-thirds of the sale of the product. However, if the landlord and tenant shared in costs of irrigation fuel, custom harvesting and hauling by one-third and two-thirds, respectively, the existing agreement would be equitable; that is, line 39 for grain sorghum would be 33.3 percent for the landlord and 66.7 percent for the tenant. These adjustments and recalculations are shown in abbreviated form on table 2.

SUMMARY

Every person who uses this method of evaluating a crop-share lease must exercise diligence and care in the computation of values which are entered in the worksheet. Only by correctly identifying input levels, values and costs can one achieve an equitable lease arrangement. Exercise care in selecting the variable inputs which will be shared as this determination can materially affect sharing ratios.

If the evaluation of your present lease indicates substantial changes are needed, do not fail to reevaluate the proposed arrangement. When sharing ratios (income and certain expenses) are changed (especially particular shared inputs), recalculate the relative contributions under such an agreement.

Complete the blank copy of the worksheet using your current or proposed sharing arrangement. If the values on line 39 differ substantially from your sharing ratio, modification of the lease is warranted.

WORKSHEET INSTRUCTIONS

The first 11 items, table 1A, on the worksheet identify long-term productive assets which do not relate to specific enterprises. These are the fixed costs in this evaluation. The following 21 items (lines 12 through 32, table 1B) are variable inputs which may be assigned to particular enterprises. The final seven items (lines 33 through 39, table 1C) are summaries of the data previously generated.

Below are specific instructions for completing the worksheet, including an example farm situation.

ITEM 1A Interest on investment on all business assets is determined by multiplying the value times an opportunity rate of return or an assumed interest rate the invested money should return. Enter the value of the farmland in column 2. If the market value does not reflect agricultural productivity (because of urban influence, mineral value, etc.), adjust to agricultural value. This value should be what a normal buyer and seller might agree on, given adequate time and normal sale terms.

The interest rate, column 3, should be the opportunity cost of money. Use a rate that an investor should expect from other investments with similar risks and opportunities. The current mortgage rate might provide a starting point. Multiply column 2 times column 3 and enter in column 4. Carry this figure to column 5 for the landowner.

EXAMPLE: 630 acres of farmland valued at $500 per acre = $315,000 entered on line 1A, column 2. In column 3 an interest rate of 8 percent is entered. The interest on investment in land ($315,000 times .08), $25,200, is entered in columns 4 and 5.

ITEM 1B Enter the current value of farm buildings in column 2. Select an interest rate, calculate return on investment and enter in columns 4 and 5, assuming that tenant will be using or benefiting from the buildings.

EXAMPLE: Farm building value is $30,000 times 8 percent = $2,400.

ITEMS 1C-E Enter the market value of the assets described in column 1. The interest rates selected for these assets may be higher than those used for land and buildings. Current interest rates paid on chattel mortgages may provide some basis for rate selection. Complete these rows, assigning the interest on investment to the landowner and/or tenant based on ownership.

EXAMPLE: Assume that the tenant's current value in machinery (other than irrigation) is $80,000 used only on this land (or prorated value of total machinery owned over acres operated). At an interest rate of 9 percent, interest on investment in machinery is $7,200 for the whole farm and for the tenant. No livestock were used in this example so line 1D is blank. The irrigation system is owned in part by the landowner and the remainder by the tenant. Assume that the total current value of irrigation equipment (excluding wells and underground pipelines which are part of the real estate) is $55,000. If the landowner owns the pumps valued at $40,000 and the tenant owns engines and surface pipe valued at $15,000, the interest on investment for the landowner would be $3,600 ($40,000 × .09) and the tenant's return on investment would be $1,350 ($15,000 × .09).

ITEMS 2A-C Enter depreciation of assets here and assign according to ownership of the particular assets. Annual depreciation amounts are obtained easily from tax records. However, if accelerated depreciation methods (declining balance, sum of year's digits and/or additional first year depreciation) are used for tax purposes, exercise some care. Since large depreciation expenses in a particular year do not represent the normal loss of value of assets, an adjustment might be necessary.

EXAMPLE: In the example, straight line depreciation is used assuming 40-year life of buildings and that they are currently one-half depreciated ($60,000 ÷ 40 = $1,500). The current value of machinery ($80,000) is depreciated over 5 years ($80,000 ÷ 5 = $16,000). Irrigation assets present a more complex problem. Wells were not included as separate assets for calculating interest on investment, but they are depreciable assets. Assume $20,000 investment in wells depreciated over 20 years ($20,000 ÷ 20 = $1,000). The underground pipeline ($15,000) depreciated over 20 years yields annual depreciation of $750. Pumps at $40,000 spread over 10 years equal $4,000. Engines ($10,000) owned by the tenant with useful lives of 4 years produce $2,500 annual depreciation. The tenant's surface pipe ($5,000) when spread over 10 years provides $500 annual depreciation.

ITEM 3 Enter total annual taxes, real estate and personal property on production assets owned by tenant and landowner.

EXAMPLE: Assume landowner's taxes total $1,500 and tenant's total $500.

ITEM 4 Enter insurance costs for property damage and liability on production assets owned by each party.

EXAMPLE: Assume insurance costs at $500 and $1,000 for landowner and tenant, respectively.

ITEM 5 Enter the prorated cost of conservation measures applicable to this year but not a part of the normal crop culture. Assign these between the parties as they will be responsible.

EXAMPLE: None assumed.

ITEM 6 If desired, enter a valuation for management. Usually this is assigned to the tenant, but in cases where the landowner provides significant management input, the item may be divided between them.

EXAMPLE: A management charge of $7,500 was chosen and entered for the tenant. This charge represented an estimate of the value of his management ability.

ITEM 7 The value of all fixed labor is entered. Include labor hired on either a yearly, monthly or hourly basis that is used in general farm operations. Hired labor for a specific enterprise (such as hoe labor in cotton) is entered on line 22. Labor provided by the farm operator and his family that is not actually paid should be valued and entered in line 7A, unpaid labor.

EXAMPLE: Assume one full-time, hired hand with total wages of $9,600 and unpaid family labor with a total value of $10,000.

ITEM 8 Use this line to enter any other fixed expenses of the farm for either the landowner or the tenant.

ITEM 9 Total fixed expenses for the whole farm, the landowner and the tenant by adding columns 4, 5 and 6, respectively.

EXAMPLE: Total fixed expenses for the farm are $96,600 with $40,450 for the owner and $56,150 for the tenant.

ITEM 10 Enter total cropland acres.

EXAMPLE: Cropland acres = 630

ITEM 11 Divide amounts in line 9 by cropland acres on line 10.

EXAMPLE: Fixed costs per acre for the whole farm are $153.30 with $64.20 for the landowner and $89.10 for the tenant (rounded to the nearest $.10).

Table 1B for estimating annual variable costs includes divisions for four different enterprises. Within each enterprise allocate variable costs to the landowner and the tenant in accordance with the lease agreement. The final columns on the page allow summation of the costs to the landowner and tenant across enterprises.

EXAMPLE: Assume that this farming operation consists of 330 acres of irrigated cotton and 300 acres of irrigated sorghum. Lines 12 through 32 are completed as applicable with the landowner paying one-third of fertilizer and insecticide on sorghum and one-fourth of those inputs and one-fourth for ginning cotton.

ITEM 33 Total variable costs are summations of columns 7 and 8 for each enterprise selected and for the whole farm as shown in table 1B.

ITEM 34 Enter the acreage of each crop and total cropland acreage in the farm.

ITEM 35 Variable costs per acre for each enterprise and for the whole farm are calculated by dividing quantities on line 33 by the acreage listed on line 34.

ITEM 36 Fixed costs per acre were calculated on line 11. Reenter these amounts.

ITEM 37 Total costs per acre are the sum of lines 35 and 36.

ITEM 38 Sum of total costs per acre for each enterprise and for the farm is obtained by adding the values in columns 7 and 8, line 37.

ITEM 39 Percentages contributed by the landowner and the tenant to each enterprise and the to farm as a whole are calculated by dividing values on line 37 by line 38.

Table 1A. Sample worksheet for long-term productive assets not related to specific enterprises.

Item of expense (1)	Estimated total value (2)	Estimated interest rate (3)	Estimated annual cost		
			Whole farm (4)	Landlord's share (5)	Tenant's share (6)
	Dollars	Percent	Dollars	Dollars	Dollars
FIXED COSTS:					
1. Interest on investment					
A. Land	$315,000	8	$25,200	$25,200	
B. Farm buildings	30,000	8	2,400	2,400	
C. Tractor, truck, automobile and equipment	80,000	9	7,200		$ 7,200
D. Breeding stock					
E. Irrigation	55,000	9	4,950	3,600	1,350
2. Depreciation					
A. Buildings, fences and other			1,500	1,500	
B. Tractor, truck, automobile and equipment			16,000		16,000
C. Irrigation			8,750	5,750	3,000
3. Taxes			2,000	1,500	500
4. Insurance			1,500	500	1,000
5. Conservation measures					
6. Management			7,500		7,500
7. Labor					
A. Unpaid			10,000		10,000
B. Hired			9,600		9,600
8. Other					
9. Total fixed expenses (lines 1 through 9)			96,600	40,450	56,150
10. Total crop land acres in farm			630		
11. Total fixed expense per acre			$153.30	$64.20	$89.10

Table 1B: Sample worksheet for variable inputs which may be assigned to particular enterprises.

Item of expense	Enterprises								Whole farm	
	Cotton		Sorghum							
	Landlord	Tenant	Landlord	Tenant	Landlord	Tenant	Landlord	Tenant		
(1)	(7)	(8)	(7)	(8)	(7)	(8)	(7)	(8)	Landlord (7)	Tenant (8)
VARIABLE COSTS:										
Preharvest										
12. Seed		2180		1500						3680
13. Fertilizer	860	2575	2720	5440					3580	8015
14. Herbicide		2310		1155						3465
15. Insecticide			500	1000					500	1000
16. Fungicide										
17. Repairs		2700		2450						5150
18. Supplies		1320		1200						2520
19. Fuel, oil, lube (tractor)		1460		1490						2950
20. Irrigation fuel		4540		8450						12990
21. Irrigation repair		1520		2310						3830
22. Labor (seasonal)		2475								2475
23. Utilities		600		550						1150
24. Insurance (crop)		4355								4355
25. Veterinary										
26. Pickup										
27. Machine hire										
28. Other										
29. Other interest	55	1735	215	1705					270	3440
Harvest costs										
30. Custom harvest		7260		5220						12480
31. Custom haul				4350						4350
32. Other: ginning	3175	9530							3175	9530

Table 1C. Sample worksheet for summaries of data previously generated.

Item of expense	Enterprises								Whole farm	
	Cotton		Sorghum							
	Land-lord (7)	Ten-ant (8)	Land-lord (7)	Ten-ant (8)	Land-lord (7)	Ten-ant (8)	Land-lord (7)	Ten-ant (8)	Landlord (7)	Tenant (8)
SUMMARY										
33. Total variable cost	4090	44560	3435	36820					7525	81380
34. Acres per enterprise	330		300						630	
35. Variable cost per acre	12.39	135.03	11.45	122.73					11.94	129.17
36. Fixed cost per acre	64.20	89.10	64.20	89.10					64.20	89.10
37. Total cost per acre	76.59	224.13	75.65	211.83					76.14	218.27
38. Sum of total cost (column 7 plus column 8, line 37)	300.72		287.48						294.41	
39. Percent contribution by: (divide line 37 by 38)										
Landlord	25.5		26.3						25.9	
Tenant		74.5		73.7						74.1

Table 2. Sample worksheet for estimating landlord's and tenant's contribution of estimated annual costs (with adjustments and recalculations).

Item of expense	Enterprises								Whole farm	
	Cotton		Sorghum							
	Landlord (7)	Tenant (8)	Landlord (7)	Tenant (8)	Landlord (7)	Tenant (8)	Landlord (7)	Tenant (8)	Landlord (7)	Tenant (8)
20. Irrigation fuel		4540	2817	~~3450~~ 5633					2817	~~12990~~ 10173
Harvest costs										
30. Custom harvest		7260	1740	~~5220~~ 3480					1740	~~12480~~ 10740
31. Custom haul			1450	~~4350~~ 2900					1450	~~4350~~ 2900
32. Other: ginning	3175	9530							3175	9530
SUMMARY										
33. Total variable cost	4090	44560	~~3435~~ 9442	~~36820~~ 30813					~~7525~~ 13532	~~81380~~ 75373
34. Acres per enterprise	330		300						630	
35. Variable cost per acre	12.39	135.03	~~11.45~~ 31.47	~~122.73~~ 102.71					~~11.94~~ 21.48	~~129.17~~ 119.63
36. Fixed cost per acre	64.20	89.10	64.20	89.10					64.20	89.10
37. Total cost per acre	76.59	224.13	~~75.05~~ 95.67	~~211.83~~ 191.81					~~76.14~~ 85.68	~~218.27~~ 208.73
39. Percent contribution by: (divide line 37 by 38)										
Landlord	25.5		~~26.3~~ 33.3						~~25.9~~ 29.1	
Tenant		74.5		~~73.7~~ 66.7						~~74.1~~ 70.9

Table 3A. Worksheet for long-term productive assets not related to specific enterprises.

Item of expense (1)	Estimated total value (2)	Estimated interest rate (3)	Estimated annual cost		
			Whole farm (4)	Landlord's share (5)	Tenant's share (6)
	Dollars	Percent	Dollars	Dollars	Dollars
FIXED COSTS:					
1. Interest on investment					
A. Land					
B. Farm buildings					
C. Tractor, truck, automobile and equipment					
D. Breeding stock					
E. Irrigation					
2. Depreciation					
A. Buildings, fences and other					
B. Tractor, truck, automobile and equipment					
C. Irrigation					
3. Taxes					
4. Insurance					
5. Conservation measures					
6. Management					
7. Labor					
A. Unpaid					
B. Hired					
8. Other					
9. Total fixed expenses (lines 1 through 9)					
10. Total crop land acres in farm					
11. Total fixed expense per acre					

Table 3B. Worksheet for variable inputs which may be assigned to particular enterprises.

Item of expense	Enterprises								Whole farm	
	Cotton		Sorghum							
	Land-lord	Ten-ant	Land-lord	Ten-ant	Land-lord	Ten-ant	Land-lord	Ten-ant		
(1)	(7)	(8)	(7)	(8)	(7)	(8)	(7)	(8)	Landlord (7)	Tenant (8)
VARIABLE COSTS:										
Preharvest										
12. Seed										
13. Fertilizer										
14. Herbicide										
15. Insecticide										
16. Fungicide										
17. Repairs										
18. Supplies										
19. Fuel, oil, lube (tractor)										
20. Irrigation fuel										
21. Irrigation repair										
22. Labor (seasonal)										
23. Utilities										
24. Insurance (crop)										
25. Veterinary										
26. Pickup										
27. Machine hire										
28. Other										
29. Other interest										
Harvest costs										
30. Custom harvest										
31. Custom haul										
32. Other: ginning										

Table 3C. Worksheet for summaries of data previously generated.

Item of expense	Enterprises								Whole farm	
	Cotton		Sorghum							
	Land-lord (7)	Ten-ant (8)	Land-lord (7)	Ten-ant (8)	Land-lord (7)	Ten-ant (8)	Land-lord (7)	Ten-ant (8)	Landlord (7)	Tenant (8)
SUMMARY										
33. Total variable cost										
34. Acres per enterprise										
35. Variable cost per acre										
36. Fixed cost per acre										
37. Total cost per acre										
38. Sum of total cost (column 7 plus column 8, line 37)										
39. Percent contribution by (divide line 37 by 38)										
Landlord										
Tenant										

[Blank Page in Original Bulletin]

Cooperative Extension Work in Agriculture and Home Economics, The Texas A&M University System and the United States Department of Agriculture cooperating. Distributed in furtherance of the Acts of Congress of May 8, 1914, as amended, and June 30, 1914.

4M — 7-79, Reprint AECO 6